65 Cranial Nerve XII: The Hypoglossal Nerve

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Definition

This nerve controls all tongue movements. Nuclear or infranuclear lesions produce paralysis, atrophy, and fasciculations of the tongue on the involved side. Supranuclear lesions produce mild to moderate contralateral weakness that may be transient. Bilateral supranuclear lesions, seen in pseudobulbar palsy, produce moderate to severe inability of the tongue to function.

Technique

Start by inspecting the tongue as it rests in the patient's mouth. Unilateral weakness or paralysis can be strongly suspected if the tongue is curled in a gentle arabesque. The tip of the tongue will point to the normal side due to unopposed normal tone in that half of the tongue. Look for atrophy and fasciculations.

Test the genioglossus by asking the patient to protrude the tongue. With unilateral weakness or paralysis, the tongue will point to the affected side due to unopposed action of the normal muscle.

Basic Science

The nuclei are dorsal and medial in the medulla. Supranuclear innervation is predominantly from the contralateral cortex and descends in the corticobulbar tract. The fibers leave the medulla and pass through the hypoglossal canal. Peripherally the nerve supplies the intrinsic muscles of the tongue, the genioglossus (tongue protrusion), the hypoglossus, and the styloglossus.

Clinical Significance

Supranuclear lesions usually produce a transient mild weakness of the contralateral side of the tongue. There is considerable individual variation, however, and on occasion a supranuclear lesion can produce what appears to be a nuclear lesion, due to the degree of the weakness. The transient nature is usually the clue.

Nuclear lesions produce atrophy, weakness, or paralysis and fasciculations. Amyotrophic lateral sclerosis and polio are two causes. Syringobulbia, infarction, and intraspinal tumors are other etiologies. Nuclear lesions are often bilateral because of the closeness of the two nuclei in the medulla.

Hypoglossal nerve involvement after the individual fibers exit from the medulla is seen with many of the lesions that affect the spinal accessory nerve (see Chapter 64). Tumors can compress the nerve in the hypoglossal canal and in the jugular foramen. Basilar meningitis, due to granulomatous infection or carcinoma, can produce hypoglossal lesions. Unilateral twelfth nerve palsy has been reported as one of the more common cranial mononeuropathies due to metastases.

References

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